

095729

~~FEB. 20~~

71-134

7
36



REPORT TO THE CONGRESS



Potential For Improvements In Department Of Defense Maintenance Activities Through Better Cost Accounting Systems

B-159797

BY THE COMPTROLLER GENERAL
OF THE UNITED STATES

FEB. 2, 1971

~~700508~~ 095729



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-159797

To the President of the Senate and the
Speaker of the House of Representatives

This is our report on potential for improvements in Department of Defense maintenance activities through better cost accounting systems. Our examination was made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

The report identifies many inconsistencies in cost accounting practices between various depot maintenance activities that preclude optimum management in the Department of Defense. The Congress recently established a Cost Accounting Standards Board, after concluding that cost accounting standards were feasible and necessary in industry. We believe that similar standards are desirable and necessary within the Government. We plan to work with the Department of Defense in developing such standards.

Copies of this report are being sent to the Director, Office of Management and Budget; the Secretary of Defense; and the Secretaries of the Army, Navy, and Air Force.

Thomas P. Staats

Comptroller General
of the United States

FEB 21 1971

D I G E S T

WHY THE REVIEW WAS MADE

The Department of Defense (DOD) spends about \$7 billion a year for depot maintenance operations--that is, the major overhauling or rebuilding of military equipment. This review was made because previous work in this area indicated that improvements in cost accounting systems were needed to achieve accurate measurement of the work force's effectiveness and accurate determination of the costs of equipment repair. Aircraft engine maintenance was chosen for this review because the Army, Navy and Air Force all use aircraft engines and because the annual cost of maintenance is sizable--exceeding \$300 million.

FINDINGS AND CONCLUSIONS

The cost accounting systems for depot-level maintenance of aircraft engines differ among the three services and among various installations within each service, making impossible any meaningful comparison between facilities performing similar work. For example:

- The Army and Navy both use job order systems for their cost accounting, but they use them in different ways. The Air Force uses a different system altogether--one based on hours of work. (See pp. 7 to 8.)
- In engine overhaul, all three services use what is called "exchange material"--rebuilt parts are used in an engine and a trade-in allowance is made for the unserviceable part. Different costing arrangements could result in the Army's showing a cost for exchange material twice that which the Navy and Air Force show. (See pp. 9 to 10.)
- A considerable quantity of fuel is used in testing engines after overhaul. The Navy records it as a direct material cost on the job order. The Army and Air Force enter fuel as an indirect cost. (See p. 11.)
- Fringe benefits, which approximate 30 percent of the labor rate, are listed by the Air Force as indirect expense. The Army and Navy list the benefits (such as annual and sick leave and Government contributions to life insurance) as an integral part of the labor cost. (See p. 12.)

In addition, all the cost accounting systems embodied some questionable practices for accumulating, allocating, and reporting maintenance costs. (See ch. 3, pp. 16 to 24.)

Cost accounting systems are essential tools for management's financial control. Without complete, accurate, and comparable cost information on the \$7-billion-a-year depot-level maintenance program, DOD management has little assurance that its decisions will result in maximum economy or effectiveness.

RECOMMENDATIONS OR SUGGESTIONS

The Secretary of Defense should issue instructions that will ensure that cost accounting systems provide complete, comparable, and accurate information on the operations and accomplishments of depot maintenance. (See p.27.)

AGENCY ACTIONS AND UNRESOLVED ISSUES

DOD has agreed that there are inconsistencies in cost reporting and has stated that many of the deficiencies set forth in this report will be corrected. Stricter compliance with applicable DOD directives and instructions will ensure the desired uniformity in cost information, DOD believes.

DOD has agreed that there are some areas in which more explicit instructions should be issued. DOD does not believe that a detailed cost accounting system should be prescribed for all depot maintenance activities because variations in the activities make that impracticable.

GAO believes that, to achieve compatibility of operations and identify areas needing improvement, cost accounting practices should be uniform in depots performing like, or similar, operations, such as aircraft engine maintenance. Although it may not be feasible to design one detailed cost accounting system to encompass tanks, trucks, aircraft, electronic items, and all other equipment used by DOD, consistency should be achieved to the maximum possible extent for similar-type depot-level maintenance activities.

Under Public Law 91-379 (August 15, 1970), a Cost Accounting Standards Board was established. The Board is responsible for promulgating cost accounting standards designed to achieve uniformity and consistency under defense contracts with industry.

GAO believes that similar cost accounting standards for maintenance activities within the Government are also needed and desirable.

GAO will continue to work with DOD in improving cost accounting systems for depot-level maintenance. Emphasis will be placed on development of

cost accounting standards for application within the Government that are comparable to those standards which are to be developed by the Cost Accounting Standards Board for industry.

MATTERS FOR CONSIDERATION BY THE CONGRESS

This report is furnished to the Congress to advise it of the potential for improved efficiency and economy in DOD maintenance activities from better cost accounting.

Tear Sheet

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

C o n t e n t s

	<u>Page</u>
DIGEST	1
CHAPTER	
1 INTRODUCTION	4
2 NONCOMPARABLE METHODS OF ACCOUNTING FOR COST	7
Design differences in military cost accounting systems	7
Different methods for accumulating material costs	8
Varying methods utilized to record labor costs	11
Inconsistencies in costing of indirect expenses	13
Differences in the extent of overhaul	14
3 QUESTIONABLE COST ACCOUNTING PRACTICES	16
Army	16
Navy	18
Air Force	19
4 CONCLUSIONS AND AGENCY ACTION	25
5 SCOPE OF REVIEW	28
APPENDIX	
I Explanation of accounting terminology	31
II Letter dated June 17, 1970, from Assistant Secretary of Defense (Comptroller)	33
III Principal officials of the Department of Defense and the military departments responsible for administration of activities discussed in this report	46

ABBREVIATIONS

DOD Department of Defense
GAO General Accounting Office
G&A general and administrative

D I G E S T

WHY THE REVIEW WAS MADE

The Department of Defense (DOD) spends about \$7 billion a year for depot maintenance operations--that is, the major overhauling or rebuilding of military equipment. This review was made because previous work in this area indicated that improvements in cost accounting systems were needed to achieve accurate measurement of the work force's effectiveness and accurate determination of the costs of equipment repair. Aircraft engine maintenance was chosen for this review because the Army, Navy and Air Force all use aircraft engines and because the annual cost of maintenance is sizable--exceeding \$300 million.

FINDINGS AND CONCLUSIONS

The cost accounting systems for depot-level maintenance of aircraft engines differ among the three services and among various installations within each service, making impossible any meaningful comparison between facilities performing similar work. For example:

- The Army and Navy both use job order systems for their cost accounting, but they use them in different ways. The Air Force uses a different system altogether--one based on hours of work. (See pp. 7 to 8.)
- In engine overhaul, all three services use what is called "exchange material"--rebuilt parts are used in an engine and a trade-in allowance is made for the unserviceable part. Different costing arrangements could result in the Army's showing a cost for exchange material twice that which the Navy and Air Force show. (See pp. 9 to 10.)
- A considerable quantity of fuel is used in testing engines after overhaul. The Navy records it as a direct material cost on the job order. The Army and Air Force enter fuel as an indirect cost. (See p. 11.)
- Fringe benefits, which approximate 30 percent of the labor rate, are listed by the Air Force as indirect expense. The Army and Navy list the benefits (such as annual and sick leave and Government contributions to life insurance) as an integral part of the labor cost. (See p. 12.)

In addition, all the cost accounting systems embodied some questionable practices for accumulating, allocating, and reporting maintenance costs. (See ch. 3, pp. 16 to 24.)

Cost accounting systems are essential tools for management's financial control. Without complete, accurate, and comparable cost information on the \$7-billion-a-year depot-level maintenance program, DOD management has little assurance that its decisions will result in maximum economy or effectiveness.

RECOMMENDATIONS OR SUGGESTIONS

The Secretary of Defense should issue instructions that will ensure that cost accounting systems provide complete, comparable, and accurate information on the operations and accomplishments of depot maintenance. (See p.27.)

AGENCY ACTIONS AND UNRESOLVED ISSUES

DOD has agreed that there are inconsistencies in cost reporting and has stated that many of the deficiencies set forth in this report will be corrected. Stricter compliance with applicable DOD directives and instructions will ensure the desired uniformity in cost information, DOD believes.

DOD has agreed that there are some areas in which more explicit instructions should be issued. DOD does not believe that a detailed cost accounting system should be prescribed for all depot maintenance activities because variations in the activities make that impracticable.

GAO believes that, to achieve compatibility of operations and identify areas needing improvement, cost accounting practices should be uniform in depots performing like, or similar, operations, such as aircraft engine maintenance. Although it may not be feasible to design one detailed cost accounting system to encompass tanks, trucks, aircraft, electronic items, and all other equipment used by DOD, consistency should be achieved to the maximum possible extent for similar-type depot-level maintenance activities.

Under Public Law 91-379 (August 15, 1970), a Cost Accounting Standards Board was established. The Board is responsible for promulgating cost accounting standards designed to achieve uniformity and consistency under defense contracts with industry.

GAO believes that similar cost accounting standards for maintenance activities within the Government are also needed and desirable.

GAO will continue to work with DOD in improving cost accounting systems for depot-level maintenance. Emphasis will be placed on development of

cost accounting standards for application within the Government that are comparable to those standards which are to be developed by the Cost Accounting Standards Board for industry.

MATTERS FOR CONSIDERATION BY THE CONGRESS

This report is furnished to the Congress to advise it of the potential for improved efficiency and economy in DOD maintenance activities from better cost accounting.

CHAPTER 1

INTRODUCTION

Management of any organization relies upon timely, accurate, and reliable information concerning the accomplishments and the costs of its activities. Accounting systems, which are tools of management, are an important source of this information. Because of the increased emphasis given by management to detailed costs of the activities of organizational elements and their production or output, numerous types of cost accounting systems have been designed to provide this information. An explanation of accounting systems and terminology is set forth in appendix I.

In Government, as in business, properly designed and implemented cost accounting systems are of vital importance to management in its effort to control costs. The complexities of production and the volume of transactions involved in maintaining today's weapons systems have become so sophisticated and so numerous that high-speed and high-capacity automatic data processing systems are needed to provide timely and accurate information to management to assist in fulfilling this responsibility.

The cost accounting systems used by the depot maintenance activities of the military departments are the specialized subsystems intended to provide accurate and reliable cost information concerning these operations.

In August 1963 DOD issued Instruction 7220.14, "Uniform Cost Accounting for Depot Maintenance," which set forth a uniform cost accounting structure for depot maintenance operations. This instruction emphasized the need for a uniform cost classification structure to provide a framework for assembling and reporting cost data on depot maintenance operations throughout DOD.

In October 1968 DOD issued Instruction 7220.29 (superseding 7220.14), "Uniform Depot Maintenance Cost Accounting and Production Reporting System," reemphasizing the need for a uniform cost accounting system. Both of these instructions prescribed a broad uniform cost classification

structure for recording and reporting cost data for depot maintenance. The principal objective of these instructions was to provide for the accumulation, recording, and reporting of comparable information on the cost of operations and the accomplishments of depot maintenance activities in relation to weapons systems supported and items overhauled or repaired. The instruction stated that such information was needed by management to (1) measure productivity, (2) develop performance and cost standards, (3) direct management emphasis, (4) review depot maintenance accomplishments in relation to planned programs, (5) review the use made of facilities supporting weapon systems, (6) compare costs between depots and contract sources for the same type of work, and (7) provide a catalog of maintenance capability that would show where duplication of capacity existed and would indicate actual and potential areas for interservice maintenance support.

DOD has estimated that about one third of its annual expenditures for operating programs is for the maintenance of equipment by the military departments. Depot-level maintenance, which comprises major overhaul or rebuilding of equipment at military depot facilities or under commercial contract, accounts for annual expenditures of about \$7 billion. The performance of in-house depot-level maintenance is accomplished at 89 separate facilities located throughout the world.

A review of the validity of maintenance cost data was undertaken because of the importance of accurate, complete, and comparable cost data in managing the DOD maintenance program. Aircraft engines were selected as the area for review because of their commonality among the military departments and because of the amount of funds expended for their maintenance. For our review, we selected the J-79-15/8 engines which were used by both the Navy and the Air Force in the F-4 aircraft, and the T-53-13 engine which was used by all military departments in various helicopters. The following data for fiscal year 1969 is applicable to the five audit sites included in our review:

Total reported cost of depot maintenance activities	\$728,801,623
Maintenance of all engines:	
Number of	13,629
Reported maintenance cost	242,024,672
Maintenance of J-79-15/8, T-53-13:	
Number of	3,417
Reported maintenance cost	50,847,827

The scope of our review is shown on page 28.

CHAPTER 2

NONCOMPARABLE METHODS OF ACCOUNTING FOR COST

The methods used by the Army, Navy, and Air Force to account for costs incurred in the overhaul of aircraft engines include many inconsistent practices which result in noncomparable cost data. At the five maintenance activities included in our review, different cost accounting systems were used by each of the military departments and different methods were followed to determine material, labor, and indirect costs. The cumulative effect of these differences, in our opinion, precludes meaningful comparisons of cost data between activities performing identical or similar work. We believe such comparisons would provide management greater assurance that its decisions would result in the greatest economies and most effective operations.

DESIGN DIFFERENCES IN MILITARY COST ACCOUNTING SYSTEMS

The cost accounting systems used by the three military departments to accumulate the costs for the overhaul of aircraft engines have been independently designed and do not provide comparable data for the results of operations. A brief description of each department's cost accounting system is presented below.

Army and Navy

The Army and Navy systems are both job order types of cost systems which contain many similarities. The principal difference is that in the Navy system costs are recorded to job orders for individual engines while the Army accumulates costs for all engines of the same type against one job order for a year. Therefore, the Navy arrives at the cost to overhaul an engine when it closes the job order upon completion of the overhaul of that engine. The Army periodically prorates a portion of the costs accumulated to the engines completed at the end of a period and then retires the completed job orders at the end of the fiscal year. Other differences between these systems pertaining to specific costs elements are discussed later in this report.

Air Force

The standard process type of cost accounting system used by the Air Force is more complex than the job order systems of the Army and Navy. The Air Force system has been designed around the use of a standard number of labor hours to perform each task of the overhaul operation. Actual costs incurred are accumulated by the various organizational elements--divisions, branches, work centers, units, and subunits--of the Maintenance Directorate at the Air Force depot. The costs assigned to completed engines are computed periodically on the basis of established labor-hour standards.

Labor costs are accumulated at the work centers and compared periodically with standard costs for the tasks completed to determine effectiveness ratios for the work centers. The labor cost to overhaul an engine is computed by adjusting the predetermined standard cost for labor upward or downward by the effectiveness ratio. Therefore, the validity of end-item overhaul costs computed under such a system is, to a large degree, dependent upon the correctness of the established standards. Indirect costs also are accumulated at the organizational level and are allocated to end-item costs in a manner similar to that used in allocating labor costs.

Material cost is accumulated by work center in which the material is used; however, when the end-item cost is computed, the material cost accumulated by the work center is distributed on the basis of standard labor hours applicable to completed units of the specific item being repaired. This distribution practice results in recording material costs to functions that do not use material and distorts the amount of cost chargeable to a type of engine overhaul. This matter is commented upon in chapter 3, page 21, of this report.

DIFFERENT METHODS FOR ACCUMULATING MATERIAL COSTS

The recorded cost of material represents a substantial portion of the total cost to overhaul an aircraft engine. For example, material costs account for over 40 percent of

the recorded costs for overhauling J-79 engines. Certain material can be identified with specific engines, and its costs can be accumulated and shown as part of the costs to overhaul or repair that engine. Other material is identifiable only to programs or general groupings of engines which necessitates allocations of these costs to the overhauled engines. We found that different methods of accumulating and recording these material costs were being used by the military departments. Some examples of these differences are discussed below.

Exchange material

Each of the maintenance activities reviewed used material in the engine overhaul process which it categorized as "exchange material." This consists of serviceable components or parts used to replace unserviceable components which are removed from engines and turned in to the supply organization for repair under other maintenance programs. The material cost for these items is accumulated by charging the supply catalog price for the serviceable items being issued and allowing a credit adjustment (trade-in) for the unserviceable items being returned to supply. The difference would be the exchange cost which is charged to the overhauled engine or to the engine overhaul program and which, in theory, is intended to represent the cost to overhaul the replaced component.

The Army uses two different methods to accumulate costs for exchangeable items. Under one method, the latest recorded cost to repair the type of unserviceable component removed from the aircraft engine(s) being overhauled is used as the material exchange cost. Under the second method, when a recorded cost for repair is not available, 40 percent of the acquisition price of the component is used as the material exchange cost.

In contrast to the Army methods, the Navy and Air Force accumulate the costs for exchangeable items, using 20 percent of the acquisition price of the component.

The effect of the different methods of costing exchange items can be demonstrated by assuming that the Army, Navy, and Air Force exchange identical items valued at \$1,000.

The cost shown for placing this item on an engine would be \$200 in the Navy and Air Force. In the Army, it could be \$400 if no recorded cost to repair was available or it could be the recorded cost to repair the component. Consequently, a comparison of material costs for engine overhaul in the Army with material costs for overhaul of the same engine in the Navy or the Air Force could reveal a significant difference although there might be no difference in the material used by the overhaul facilities.

Missing components

The military departments do not follow uniform methods or procedures concerning the treatment of costs for material replaced because various components are missing from aircraft engines when they are received for overhaul. The Army installation and one Navy installation included in our review recorded the cost of serviceable components used to replace missing components on engines being overhauled as material costs. The other Navy installation and the Air Force depots did not include the cost of replacing these missing components in the engine overhaul costs.

Our analysis at the Navy installation that excluded the costs of missing components showed that, during the 8 months ended May 31, 1969, about \$289,000 of material was issued to replace missing parts.

Allocation of material costs

The procedures followed in costing certain other material which was not readily and economically identifiable to any specific engine differed significantly.

At one Navy facility, these material costs were collected separately and then allocated to overhauled engines and to repaired engines in an arbitrary 3 to 1 ratio. Another Navy facility charged the same kind of material costs directly to the benefiting engine program--either overhaul or repair. These charges were then distributed equally to the individual engines in process within that program.

The Army activity and one Air Force activity also charged such material costs directly to the benefiting

engine program. Their procedures differed from the second Navy activity above in that no distribution of material charges was made to individual engines within the program.

The other Air Force activity had still another procedure for distributing material costs to overhaul and repair programs. Material was first charged to individual engine components that were applicable to multiple programs. Then, on a component-by-component basis, these costs were distributed to the various overhaul and repair programs in the ratio of standard labor hours in each overhaul and repair program to total standard labor hours in all programs.

Costing engine fuel

The cost of fuel used in the testing of engines is also treated differently in the accumulation of costs. After an engine has been overhauled or repaired, it is tested to ensure that operating requirements such as thrust and fuel consumption meet the performance standards. If an engine does not meet all the standards, it requires adjustment and retesting. This process results in the use of a considerable quantity of engine fuel at the depot facilities. The Navy records the cost of this fuel as material cost to individual job orders. However, the Army and Air Force record it as an indirect expense.

VARYING METHODS UTILIZED TO RECORD LABOR COSTS

Different methods were followed, also, in the accumulation of labor costs. Various labor rates were utilized, and fringe benefits and overtime premium pay were accumulated and recorded differently. These inconsistencies are discussed below.

Labor rates

In the Army and Air Force, the rates used in the development of labor costs represent the estimated annual average hourly rate of pay computed for each work center. The difference between this rate, which is referred to as a standard or average rate, and the actual payroll rate is identified as the labor variance and is included as a part

of indirect expenses. The Navy develops its labor costs through the use of the actual payroll rates for the workers performing the maintenance tasks. Therefore, no variance amount exists to be included as indirect expenses in the Navy.

Fringe benefits

Fringe benefits--such as annual and sick leave and Government contributions to life insurance, health insurance, and retirement--which approximate 30 percent of the labor rate, are included as labor costs at Army and Navy facilities. The Air Force includes these fringe benefits as a part of its indirect expense. The difference in these methods can be illustrated by the following example.

If a labor rate were \$4 per hour, the Army and Navy would include about \$5.20 (\$4 plus \$1.20 for fringe benefits) as the cost of labor for each hour worked. The Air Force would show \$4 per hour as its labor cost, and the \$1.20 would be recorded as indirect expense. Therefore, in comparing labor costs for similar maintenance tasks or engines, the Army and Navy would show a labor cost that would be about 30 percent higher than the labor cost shown by the Air Force.

Overtime premium pay

Overtime premium pay is the differential paid to an employee for working in excess of the normal hours. The Army and Navy include overtime premium pay in labor costs, while the Air Force includes it in indirect expenses. The following example illustrates this difference.

Using the labor rate of \$4, as above, cost of labor for each overtime hour worked would be shown as follows. The Army and Navy would include \$7.20 as labor costs, (1-1/2 times the labor rate plus 30 percent of base labor rate for fringe benefits). The Air Force would consider \$4 as labor cost and \$3.20 as indirect expense.

INCONSISTENCIES IN COSTING OF INDIRECT EXPENSES

Costs which cannot be identified readily with an overhauled or repaired item are normally shown as indirect expenses. These expenses are generally classified as either production overhead expenses or general and administrative (G&A) expenses and are allocated to units of production. We noted inconsistencies in the types of costs included in both categories of indirect expenses.

Production overhead

Those costs considered as production overhead varied significantly among the military departments. The Air Force considered all costs, other than material and labor costs, which originated within the maintenance facility as production overhead expense. The Army and Navy considered some of the costs originating within the maintenance facility as production overhead but excluded others. Other types of costs, such as the fringe benefits and overtime premium discussed previously, were also considered differently by the services.

The above differences are illustrated by the ratios of production overhead expenses to direct labor expenses. For periods within the second half of fiscal year 1969, these ratios approximated 175 percent, 90 percent, and 60 percent for the Air Force, Army, and Navy, respectively. These differences are not indicative of the actual variances in the costs to perform like functions but are rather the results of the inclusion or exclusion of different types of costs in the production overhead of each service. When such variations exist in the ratios of categories of costs, it is impossible, without voluminous analysis, to make meaningful comparisons of the costs incurred by different organizations to overhaul or repair like items.

General and administrative expenses

In determining the various costs to be included in G&A expenses, Air Force methods again significantly differed from those of the other services. The Air Force considered

only those costs originating on the base complex outside the maintenance activity as G&A expenses. These costs are referred to as station support cost and include the cost of police, fire protection, and such headquarters' costs as the commander's office, planning, personnel, controller, and data processing services. On the other hand, the Army and Navy included costs originating both within and outside the maintenance complex in their G&A expenses. For example, at one Navy facility, station support costs represented only about 30 percent of the G&A expense. The other 70 percent of G&A expense was for costs originating within the maintenance facility which the Air Force would have included in production overhead.

Although the Army and Navy prorated their G&A expenses to overhauled engines, the Air Force did not consistently include G&A expenses in engine overhaul cost. However, current Air Force regulations, not implemented at the time of our review, require Air Force activities to include G&A expenses as a part of the costs to overhaul engines in future reports. Even upon full implementation, the G&A expenses of the Air Force will not be comparable to those of the other services because of the differences in the makeup of the costs considered as G&A expenses. The inclusion or exclusion of certain categories of costs from G&A expenses makes comparisons, without analysis and reconstruction of the costs, impracticable.

DIFFERENCES IN THE EXTENT OF OVERHAUL

Aircraft engines are generally stored and shipped in specially designed and constructed metal containers. These containers, known as cans, are designed for a specific engine type to maintain engines in a controlled state of preservation during storage and shipment.

At the two maintenance activities within the Navy and one of the sites within the Air Force, we found that the engine overhaul process and corresponding cost accumulation was accomplished under a "can to can" concept. The "can to can" concept encompasses the total accumulation of applicable overhaul costs from the time the can is opened and the unserviceable engine is removed from the can until it has been overhauled, preserved, and recanned. On the other

hand, the Army maintenance activity and one Air Force maintenance activity do not operate under this concept. They excluded from the engine overhaul costs, the costs incurred for the uncanning and depreservation of the unserviceable engines as well as the preservation and canning of the overhauled engines. Therefore, costs of the overhaul process at the various facilities would not include costs for the same tasks and meaningful comparisons would be precluded.

CHAPTER 3

QUESTIONABLE COST ACCOUNTING PRACTICES

The cost accounting system for depot maintenance activities, as set forth in DOD Instruction 7220.29, should be designed to (1) provide the basis for determining the quantity and total cost of completed end items identified with weapons support systems and (2) account for and identify all elements of cost incurred in the performance of depot maintenance, including indirect cost associated with support functions and the related general and administrative cost of the activity.

We found that each of the five maintenance activities included in our review followed certain cost accounting practices which, in our opinion, were not in accordance with the above principles. We found questionable accounting practices in the accumulating of cost elements, in the methods of allocating indirect costs, and in the reporting of the accumulated maintenance costs. The practices considered questionable are described below.

ARMY

Certain costs incurred in performing aircraft engine overhaul were either excluded from the engine overhaul program or misallocated to specific job orders within the program; therefore, the reported cost of engine overhaul was distorted.

Failure to accumulate and allocate cost

We found that certain costs for contractual services and military labor were not being included in the cost of overhauling aircraft engines at the Army Aeronautical Depot Maintenance Center. Certain engine components, such as fuel controls and booster pumps, were being overhauled by commercial contractors on contracts awarded by the U.S. Army Aviation Systems Command. These components were shipped directly from the Center's maintenance shops to the applicable contractors, bypassing the system for costing exchange material previously discussed. (See p. 9.) Therefore, the

Center did not include any cost for the overhaul of these components in its accumulation of material costs.

Despite the fact that the Center recorded the military man-hours and related costs in total, these costs, which were paid from the military personnel appropriations, were not allocated to specific job orders. Therefore, the overhead costs applicable to the job orders accomplished during fiscal year 1969 were understated by about \$258,000 for the unallocated military labor.

Both of these areas were brought to the attention of local officials, and action was taken to include the costs for components repaired commercially in the engine program. Also, Center officials advised us that the costs for military labor would be included in the engine overhaul costs in fiscal year 1970.

Improper cost transfers between
job orders and engine programs

In April 1969 the Center performed an Engine and Engine Components Cost Realignment Study to compare the overhaul costs of engines and engine components to the cost estimates upon which the overhaul workloads were based. This study revealed that, of 144 overhaul job orders, 44 were in excess of their cost estimates by about \$5 million.

As a result of the above study, over \$4 million in material costs were transferred from job orders with cost overruns to job orders having underruns. These transfers were made without analysis of the recorded costs to determine the validity of the cost overruns and underruns and without regard for the integrity of the recorded cost information. Estimated and recorded costs were thereby adjusted into agreement by this transfer of costs.

Center officials informed us that the cost transfers were made because the recorded costs were considered to be erroneous and that the cost estimates, which were based on historical cost data, were considered to be valid. This in itself indicates to us that the recorded cost information is not considered valid by the very people who are

accumulating and supposedly using it. The continued practice of adjusting recorded costs to agree with estimated costs would distort the cost of operations and comparisons of costs with those of other activities would not be meaningful. Any future attempted uses, such as cost estimations, trend analyses, and efficiency measurements, would result in distortions.

NAVY

We identified accounting practices at Navy locations which, in our opinion, prevented full disclosure of costs applicable to the performance of depot maintenance.

Labor and material charges inconsistent for modifications

We found that costs of modification kits used during the engine overhaul were not charged to the engine overhaul program. However, the labor costs necessary to perform these modifications were charged to the engine overhaul program. Although we did not determine the dollar significance of the excluded costs, a review of the contents of nine modification kits being applied to J-79-8B engines during overhaul disclosed that the value of the kits ranged from \$3 to \$1,003 per kit. Although this procedure is permissible under DOD Instruction 7040.25, dated September 1, 1966; in our opinion, both labor and material costs relating to modification of engines during overhaul should be accounted for on the same basis to the greatest extent possible.

Erroneous allocation of charges to job orders

Our review at one Navy maintenance activity disclosed that labor costs applicable to completed job orders were included in the uncompleted job orders for overhaul of similar items. In the Navy, job orders are closed; that is, no more costs are charged to them; when the engine

overhaul has been completed. Cannibalization practices¹ are often used to expedite engine overhauls, but no costs for the cannibalized serviceable items are included in the job order for the engine being overhauled. Subsequently, the costs for repairing the replaced unserviceable items are arbitrarily charged to open job orders for similar engines. Likewise, because of delays in processing of documentation under the exchange material procedures, costs for the exchanged items are often included in job orders that are subsequently closed and the related credits (trade-ins) are applied later to open job orders for similar engines. These practices result in the distortion of individual job order cost data since these costs are not applicable to the engine job orders so charged. For the period January 4, 1969, through June 14, 1969, about \$322,000 of costs were charged to other than the applicable job orders.

AIR FORCE

The standard cost accounting system used by the Air Force to compile engine maintenance costs has one major characteristic which precludes meaningful comparison with cost results of the Army and Navy--that is, the system is not designed to accumulate actual costs by end item.

In addition, our review of the methods used to accumulate and report the costs to overhaul engines at the two Air Force facilities disclosed (1) weaknesses in review and control of labor standards, (2) unrealistic allocation of actual material costs, and (3) inconsistencies in reporting maintenance costs. Therefore, the individual engine overhaul costs reported by the Air Force are, in our opinion, unreliable and do not provide a basis for meaningful cost comparisons with other DOD activities. The weaknesses noted are discussed below.

¹The removal of components or parts from engines being overhauled and their use on other engines to complete or continue the overhaul process without delay.

Weaknesses in review and
control of labor standards

We found that many labor standards in use at the Oklahoma City Air Materiel Area were outdated, unsupported, and based on informal estimates. In addition, management had exercised little control over the validity of labor standards or in selecting those labor standards to be reviewed.

Labor standards are used to evaluate the effectiveness of the labor force and as a basis for the allocation of material and overhead costs to end items. Consequently, incorrect standards would necessarily distort work center effectiveness ratios and statements of end-item maintenance costs. Incorrect standards could result in (1) erroneous decisions in regard to in-house or contractor maintenance, (2) improper reimbursement for maintenance performed for other activities, or (3) unwarranted actions involving personnel or facility changes.

The Air Force, because of continually changing conditions, considers a labor standard which has been in existence for over 2 years to be out-of-date. Our review of the labor standards for the J-79 engine disclosed that most labor standards had not been reviewed within the 2-year period. We were advised, in fact, that many of the labor standards were obtained in 1965 when the overhaul of the J-79 engine was transferred to the Oklahoma City Air Materiel Area. We were advised also that supporting documentation often was missing or incomplete at the time of this transfer.

We examined labor standards for seven components of the J-79 and found that the supporting data were incomplete or still not available in the majority of instances. Furthermore, supporting documents indicated that a majority of the labor standards in use and covering over 80 percent of the production man-hours were not based on time and motion studies.

We found also that specific standards were reviewed by the applicable engineering section primarily on request by production personnel. We were advised that the engineering

section did not have sufficient personnel to make routine studies of established labor standards.

Current reporting procedures do not provide for the comparison of actual labor experience to the established standards for individual operations. Standards are not compared to actual experience below the work center level. A work center involves from 150 to over 700 people and possibly hundreds of operations and standards. Comparison of the accumulated standards and actual labor hours at the work center level does not identify those individual labor standards where major variances exist, therefore, appropriate action cannot be taken.

Unrealistic allocation of material costs

The Air Force system is so designed that material costs accumulated by work center are allocated to all work centers on the basis of standard labor hours established for the items repaired. Thus, material costs are allocated to work centers in which no material is used. Subsequently, these allocated material costs are prorated to the production program on the basis of standard hours to overhaul or repair the items included in the program. These prorations are intended to distribute material costs from the work centers where they have been accumulated to the various maintenance programs at the maintenance activity. The maintenance programs are the major overhaul and minor repair of engines as well as component repairs referred to as management items subject to repair.

By comparing the June 1969 material cost distribution relative to the J-79 compressor rotors by work center computed by the Air Force on a standard-hour basis with a GAO distribution based on actual materials usage, we found that the distribution based on standard hours resulted in misallocation of material costs to work centers. The distribution of material costs to work centers is as follows.

Distribution to Work Centers

<u>Work center</u>	Actual usage (note a)	Standard hour proration
Disassembly	\$ -	\$ 7,898
Parts overhaul	3,984	6,294
Subassembly	28,741	18,251
Machining and welding	<u>-</u>	<u>282</u>
Total	<u>\$32,725</u>	<u>\$32,725</u>

^aGAO computed.

This computed material cost is then distributed to the maintenance programs on the basis of standard hours applicable to the various programs.

Allocation to Maintenance Program
after Distribution to Work Centers

<u>Program</u>	Allocations based on actual usage (note a)	Allocations based on standard hours
J-79-15 major overhaul	\$17,081	\$12,936
J-79-15 minor repair	1,647	1,263
J-79-17 major overhaul	4,012	2,972
J-79-17 minor repair	1,751	1,439
Management items subject to repair	<u>8,234</u>	<u>14,115</u>
Total	<u>\$32,725</u>	<u>\$32,725</u>

^aGAO computed.

Had the distribution of material costs been based on actual usage, J-79 engine overhaul cost would have been significantly greater.

The above illustrations, in our opinion, clearly show that the Air Force method results in the misallocation of material costs to maintenance programs. For example, on

the basis of our computed usage, we estimated that the material costs for the J-79-15 major overhaul programs were understated by about 32 percent.

Inconsistencies in reporting
maintenance costs

Different reporting systems used by the Air Force maintenance facilities show widely varying unit costs applicable to the same output. We identified four reports at the Oklahoma City Air Materiel Area with four different costs to overhaul J-79-15 engines during the same time period. The reported costs for overhaul of the J-79-15 engines for two reporting periods, December 31, 1968, and June 30, 1969, are as follows:

	<u>End Item Product Cost Report</u>	<u>Maintenance Cost Summary (note a)</u>	<u>Industrial Fund Cost of Sales Statement</u>	<u>Organic Maintenance Cost Report (note a)</u>
	-----December 31, 1968-----			
Labor cost	\$ 5,422	\$ 6,059	\$ 4,852	\$ 6,079
Material cost	9,398	9,678	9,222	9,411
Exchange material	397	121	-	155
Overhead cost	9,599	10,622	8,554	10,763
G&A expense	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total	<u>\$24,816</u>	<u>\$26,480</u>	<u>\$22,628</u>	<u>\$26,408</u>

^aGAO computed unit costs using Air Force-reported total cost and units completed.

	End Item Product Cost <u>Report</u>	Maintenance Cost Summary (note a)	Industrial Fund Cost of Sales <u>Statement</u>	Organic Maintenance Cost Report (note a)
----- June 30, 1969 -----				
Labor cost	\$ 7,064	\$ 6,228	\$ 5,620	\$ 5,597
Material cost	17,421	12,751	6,960	10,844
Exchange material	267	269	-	319
Overhead cost	13,259	11,325	9,659	10,323
G&A expense	<u>-</u>	<u>-</u>	<u>-</u>	<u>2,557</u>
Total	<u>\$38,011</u>	<u>\$30,573</u>	<u>\$22,239</u>	<u>\$29,640</u>

^aGAO computed unit costs using Air Force-reported total cost and units completed.

Each of the four reports resulted from different methods of cost distribution and showed significant variances in all the elements of the cost to overhaul J-79-15 engines. The reporting of four different costs to overhaul the same item during the same time period can only confuse and contribute to the lack of confidence in the reported cost data.

We believe that overhaul costs should be accumulated in such a manner that differences between the various reports are readily reconcilable and that the reports identify those significant factors of cost which result in differences from other reports.

CHAPTER 4

CONCLUSIONS AND AGENCY ACTION

The benefits to be obtained from the use of comparable cost information on the operations and accomplishments of similar or like depot maintenance activities have long been recognized by DOD. GAO agrees with the stated philosophy of DOD and believes that the accumulation on a consistent basis of comparable cost data for maintenance expenditures, which amount to \$7 billion annually, is needed if management is to be provided with data that can be used to make decisions which will result in more efficient maintenance operations.

We believe that DOD, while recognizing the benefits of a sound cost accounting system, has not provided adequate control or instruction in sufficient detail to accomplish the objective it promulgated in DOD Instructions 7220.14 and 7220.29.

Our review of the validity of the cost accounting data at the five DOD maintenance facilities included in our review disclosed many inconsistencies in the methods and procedures followed (see ch. 2), as well as questionable practices used (see ch. 3) in the present cost accounting systems. The inconsistencies and questionable practices followed in compiling the data on costs of over \$240 million for the overhaul of aircraft engines at these sites are so numerous that the use of the cost data by management as an effective means of financial control is precluded. Therefore the use of the recorded and reported data for meaningful comparisons of program costs or of cost elements between facilities is compromised. We believe that, to assist management in the decisionmaking process and to identify those areas warranting additional management emphasis, the systems and methods used by the military departments to account for costs of like activities and operations should be revised to ensure the comparability, compatibility, and reliability of reported cost data accumulated on a consistent basis.

We recognize that it may not be feasible to design one detailed cost accounting system to encompass all of the various types of equipment, such as tanks, trucks, aircraft, and electronic items, used by DOD. We believe, however, that consistency in cost accounting standards and practices for similar types of depot maintenance activities is a worthwhile objective and that DOD should strive to obtain this objective to the greatest extent possible.

We previously recognized the necessity and desirability of applying uniform cost accounting standards to negotiated defense contracts in a report dated January 19, 1970, (B-39995(1)). The Congress subsequently established a Cost Accounting Standards Board (Public Law 91-379 dated August 15, 1970) which was given the responsibility for promulgating cost accounting standards designed to achieve uniformity and consistency in cost principles followed by defense contractors. We believe that the need exists for a similar effort within the Government. In this connection we intend to continue to work with DOD in accomplishing improvements in the cost accounting systems used by depot maintenance activities. Emphasis will be placed on establishing cost accounting standards for application within the Government which are comparable to those standards which are to be developed by the Cost Accounting Standards Board for industry.

Agency Comment

In our draft report to the Secretary of Defense, we proposed that more definitive instructions be issued for the design of a depot maintenance cost accounting system and that steps be taken to ensure the implementation of a system which would provide for the consistent accumulating, recording, and reporting of comparable information on the results of depot maintenance activities. We proposed also that this system account for all costs incurred in the performance of depot maintenance and provide for relating these costs to weapons or support systems.

In replying to our draft report, the Assistant Secretary of Defense, Comptroller (see app. II), agreed that there were some areas in which more definitive instructions should be prescribed, but he did not agree that a detailed cost accounting system should be prescribed for all depot maintenance activities. The Assistant Secretary believes that the operations and organizations of depot maintenance activities are too varied to prescribe a detailed cost accounting system to record the results of operations. We feel that, to achieve compatibility of operations and to identify those areas where needed improvements in efficiency are warranted, cost accounting practices and procedures should be uniform in depots performing like and similar operations, such as aircraft engine maintenance.

The Assistant Secretary concurred in our conclusion that there were inconsistencies in the depot maintenance costs currently being reported. The Assistant Secretary also advised that many of the deficiencies disclosed in our report would be corrected by July 1, 1970, and he assured us that his office was making a continuing effort to improve the quality of the cost accounting and reporting system for depot maintenance. He believes that compliance with DOD Directive 7410.4, "Regulations Governing Industrial Fund Operations," and DOD Instruction 7220.29, "Uniform Depot Maintenance Cost Accounting and Production Reporting System," will ensure the desired uniformity in information of the operations and accomplishments of depot maintenance activities.

CHAPTER 5

SCOPE OF REVIEW

Our review was performed at the Army Aeronautical Depot Maintenance Center, Corpus Christi, Texas; the Naval Air Rework Facilities at North Island, California, and Quonset Point, Rhode Island; and the Air Materiel Areas at Oklahoma City, Oklahoma, and San Antonio, Texas. The review included examination of pertinent records and discussions with responsible officials. In performing the review, we evaluated policies, procedures, and criteria of cost accounting systems and made appropriate tests of the practices and procedures followed.

Because of the magnitude of the entire DOD maintenance program, we limited our review to the cost accounting applicable to the J-79-15/8 engines in the Air Force and Navy and to the T-53-13 engine in the Army. Procedures and practices followed for these engines apply to all other engines overhauled at the sites reviewed. The fieldwork on the matters discussed in this report covered maintenance operations and related cost information occurring in fiscal year 1969.

APPENDIXES

EXPLANATION OF ACCOUNTING TERMINOLOGY

Accounting system comprises the written records and reports of the financial operations concerning an organization's activities prepared in accordance with generally accepted predetermined rules, standards, and principles.

Cost accounting system is a subsystem of the accounting system designed to show the detailed costs of operations and the accumulated costs by types of products. The cost accounting system is intended to assist management in the control of cost and to aid in the improvement of operations.

Cost elements are the breakdown of cost information within the cost accounting system into meaningful classifications. These classifications are generally material costs, labor costs, and indirect expenses, with subclassifications dependent on the type of activity.

Material costs are those for materials which can be readily identified as entering into and becoming a part of the overhauled or repaired product.

Labor costs are for labor performed which is identifiable in production.

Indirect expenses are those costs incurred, with the exclusion of cost identified as labor and material, which are of a general nature and cannot be readily identified with the overhauled or repaired item. These costs usually include such items as utilities, building depreciation, supervision, etc., and are normally distributed from an aggregate grouping on the basis of labor hours or labor costs.

Job order cost system is a cost accounting system in which the elements of costs associated or identified with the various stages of overhaul or repair are identified and accumulated for an item or type of product on a record referred to as a job order. This system is used when it is practicable to keep a separate record of each product.

Process cost system is a cost system in which total costs and quantities produced are determined for a set period of

time and the cost per unit of production is determined by averaging the cost over the total production. This system is generally used when the product is produced by a sequence of continuous operations for which it is impractical to record costs by item or type of product.

Standard cost system is an accounting system which compares actual costs with estimated costs (standard costs) of production followed by analyses of the variations between the actual and standard costs. This system may be combined with either the job order or process system.

Uniformity in cost accounting is the concept which standardizes (1) cost terminology, (2) procedures for consistent accumulation and allocation of cost data, and (3) report presentation. It also ensures conformance to a set of generally accepted principles of the cost data accumulated by individual activities or by items or types of products. Finally, it permits comparisons that can be relied on by management to determine where its attention should be directed.



ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

COMPTROLLER

17 JUN 1970

Mr. C. M. Bailey
Director, Defense Division
General Accounting Office

Dear Sir:

My letter of April 11, 1970 stated that we would provide you with a complete statement on each deficiency/recommendation contained in your draft report, "Potential for Improvement of Maintenance Procedures by Expanding the Use of Cost Accounting Data" and our plans for improvements. (OSD Case #3078)

The statement on each deficiency/recommendation is at Enclosure 1 to this letter. The following paragraphs cover your general recommendation and our plans for improvement.

We concur that there are inconsistencies in the depot maintenance costs currently being reported. However, many of the inconsistencies pointed out in your report are the result of difficulty in complying fully with existing instructions during the transition period in the implementation of industrial funds and the requirement for total costs. The matters discussed in the report cover maintenance and related cost information occurring in Fiscal Year 1969. The Army activity and the two Air Force activities reviewed were in their first year of operation under the industrial fund, which accounts for many of their difficulties. The industrial fund concept of operations is quite different from the systems previously used and it takes time for the activities to convert to the new systems and to fully implement them and for us to assure compliance with all the requirements. Operation under the industrial fund concept, however, will provide an improved basis for the collection of costs and production data identified to items completed and weapon systems supported.

We also concur that there are some areas in which more definitive instructions should be prescribed. However, we do not agree that a detailed cost accounting system should be prescribed for all depot maintenance activities. The operations and organizations of the activities are too varied to permit this. We believe that in the instances where required that the more definitive instructions should be incorporated in Department of Defense Instruction 7220.20, "Uniform Depot Maintenance Cost Accounting and Reporting System."

APPENDIX II

Page 2

My office is making every effort to improve the quality of the cost accounting and reporting for depot maintenance and will continue to do so. We feel that, while there is still much to be done, we have made much progress in the past few years. Your report will provide valuable assistance in our continued efforts in this area.

Our first efforts will be to take action on those deficiencies pointed out in your report which still exist. As noted in Enclosure 1, many of the deficiencies will be corrected by actions planned July 1, 1970. Our actions will consist of specific requests to the Military Departments to comply with existing requirements or when required, issuing changes to make the requirements of DoDI 7220.29 more definitive.

We will then follow up with each of the Military Departments on their implementation at depot maintenance activities of DoD Directive 7410.4, "Regulations Governing Industrial Fund Operations," and DoD Instruction 7220.29, "Uniform Depot Maintenance Cost Accounting and Production Reporting System." Compliance with these documents should assure the desired uniformity in information on the operations and accomplishments of depot maintenance activities.

As you know, we have submitted DoDI 7220.29 to the General Accounting Office for review and approval. Discussions with members of the General Accounting Office staff who are reviewing the Instruction indicate that they will have some recommendations relative to this Instruction.

Sincerely,



Robert C. Moot
Assistant Secretary of Defense

Enclosure

DESIGN DIFFERENCES IN MILITARY COST SYSTEMS

GAO: The cost systems used by the three military departments to accumulate the costs for the overhaul of aircraft engines have been independently designed and do not provide comparable data for the results of operations.

OSD: The activities reviewed operate under the industrial fund. The basic principles and policies for cost accounting under the industrial fund are set forth in DoD Directive 7410.4, "Regulations Governing Industrial Fund Operations." Depot maintenance activities are also required by DoD Instruction 7220.29 to provide for accumulation and reporting "total costs" regardless of source of funding and identification of costs to items produced and weapon systems supported. Although the systems in the military departments were independently designed, they are required to conform to the principles, policies, standards and basic systems features prescribed by DoD Directive 7410.4, which has been approved by the Comptroller General, and the requirements of DoD Instruction 7220.29. If the systems were properly implemented, the cost information obtained should provide comparable data for the results of operations.

We concur that the validity of end item overhaul costs computed under the Air Force standard cost system is to a large degree dependent upon the correctness of the established standards. A discussion of the established standards as well as the treatment of the elements of expense by the three military departments are included in comments which follow.

DIFFERENT METHODS FOR ACCUMULATION OF MATERIAL COSTS

EXCHANGE MATERIAL

GAO: The Army costs the latest recorded cost to repair the component being exchanged or, if no recorded cost is available, 40% of the acquisition cost of the component. The Navy and Air Force cost 20% of the acquisition price of the component.

OSD: OSD instructions provide that the amount to be charged in the case of exchangeable items installed during overhaul will be the standard cost to repair the item exchanged. The determination of the standard cost to repair exchangeables is the responsibility of the military departments. The Army method of charging the latest recorded cost is obviously incorrect and the discrepancy between the 40% of acquisition cost charged by the Army and the 20% of acquisition cost charged by the Navy and the Air Force would indicate that someone has erred in the computation of the standard cost to repair. We will study this to determine if there are valid differences in the standard cost to repair exchangeable items.

MISSING COMPONENTS

GAO: The Army installation and one Navy installation recorded the cost of serviceable components used to replace missing components on engines being overhauled as material costs. The other Navy installation and the Air Force depots did not include the cost of replacing these missing components in the engine overhaul costs.

OSD: The inconsistency in application of costs for missing components appears to result from a misunderstanding of the provisions of two DoD Instructions, which will require clarification. DoD Instruction 7220.29 has as its goal the collection and reporting of total costs and provides for reporting of all costs incurred in the performance of depot maintenance,

regardless of how such costs are financed. DoDI 7040.5, which was approved by the Comptroller General, is oriented to the financing of costs. It defines "expense" type material and "investment" type material, and provides that components classified as "investment" type items are not to be charged as expense, although the cost of maintenance, repair, overhaul, or rework of an investment type item is an expense. Under the provisions of DoDI 7220.29 an investment type item used in maintenance to replace a missing component should be charged to the job on a statistical basis to permit accumulation of total cost. DoDI 7040.5 is currently being revised and a clarification in this area is being considered. We also believe the DoDI 7220.29 can be clarified and this will be considered as soon as DoDI 7040.5 is revised.

ALLOCATION OF MATERIAL COSTS

GAO: The procedures followed in costing certain other material which is not readily and economically identifiable to any specific engine differed significantly.

OSD: We concur that uniform procedures should be followed in costing of materials. Our instructions specify that materials which cannot be identified accurately and economically to a job will be treated as indirect expense and there are no procedures authorized for allocation of material costs other than through the application of overhead. However, we recognize that the level at which the job orders are issued can have an impact on the costing. For example, if job orders are issued for individual engines, as you state is the case in the Navy activities reviewed, it would result in more material which could not be identified to the individual engine and the amount of material distributed through the overhead application would

be larger. On the other hand, if the job order is issued for all of the same type engines for a year, as was being done by the Army activity, much more material could be identified to the job and would be treated as a direct material cost. The Air Force has advised that the improvements for implementation July 1, 1970 will identify the cost of material to specific items. We plan to review the material costing procedures in more detail and correct the deficiencies reported.

GAO: The cost of fuel used in testing of engines is also treated differently in the accumulation of costs. The Navy records the cost of this fuel as a material cost to individual job orders. However, the Army and Air Force record it as an indirect expense.

OSD: We will review the procedures in use with the objective of attaining consistency in this area.

VARYING METHODS UTILIZED TO RECORD LABOR COSTS

LABOR RATES

GAO: The Army and Air Force use standard or average rates and include the variance between actual payroll and labor distributions at standard rates as a part of the indirect expense. Navy uses actual payroll rates for the workers performing the maintenance tasks and has no variance.

OSD: The use of standard or average labor rates is permissive in DoDD 7410.4 in those cases where the range of actual pay rates is limited so that distortion of costs is minimal. Considering that standard or average rates should be kept under surveillance to assure that variances from actual are kept to a minimum, we do not consider this to be a significant difference in the systems.

FRINGE BENEFITS

GAO: Fringe benefits, such as annual and sick leave, Government contributions to life insurance, health insurance, and retirement, which approximate 30% of the labor rate are included as labor costs at Army and Navy facilities. The Air Force includes these fringe benefits as a part of its indirect expense.

OSD: DoDD 7410.4 is very explicit that these fringe benefits should be included in labor costs. The Air Force will cost fringe benefits as a labor cost commencing July 1, 1970.

OVERTIME PREMIUM PAY

GAO: The Army and Navy include overtime premium pay as labor costs, while the Air Force considers it as indirect expense.

OSD: DoDD 7410.4 provides that overtime premium shall be charged as indirect cost, except where the overtime is worked on a customer order which specifically authorizes overtime. We will insist on compliance with the Directive.

INCONSISTENCIES IN COSTING OF INDIRECT EXPENSE

GAO: Those costs considered as production overhead and general and administrative expenses varied significantly between the Air Force and the other military departments.

OSD: DoDI 7220.29 provides that indirect costs of organizational units (shop, work center) performing actual maintenance work will be separately identified from the general and administrative costs of management and support organizational units serving the entire depot maintenance activity, such as personnel, comptroller, data processing, communications, security, fire protection, and command. This is the most explicit definition of

production overhead and general and administrative overhead. These two categories are maintained to permit an equitable distribution of overhead. Production expense for a cost center is to be applied only to work performed within that cost center. General and administrative expense is to be applied to all work performed by the depot maintenance activity. We will review our Directives and Instructions applicable to this subject to determine whether they need to be clarified, and, if not, we will require the Services to comply with existing requirements. If necessary, we will clarify our requirements on this subject.

DIFFERENCES IN THE EXTENT OF OVERHAUL

GAO: Navy and one Air Force installation included all costs from the time the container was opened and the unserviceable engine was removed until it had been overhauled, preserved and repackaged in the container. One Air Force installation and Army excluded unpacking and depreservation of the unserviceable engine and preservation and repacking the overhauled engine.

OSD: This condition results from different mission assignments in the depot maintenance and supply depot operations. We concur that the discrepancy should be corrected, if feasible, and will look into the matter.

QUESTIONABLE COST ACCOUNTING PRACTICES

ARMY

FAILURE TO ACCUMULATE AND ALLOCATE COSTS

GAO: We found that certain costs for contractual services and military labor were not being included in the cost of overhauling aircraft engines.

OSD: Since the report indicates that corrective action is being taken we will offer no comments. However, we will follow up to ensure that the corrective action is taken.

WEAPON/SUPPORT SYSTEM COSTING

GAO: The cost of overhauling engines was not identified to the specific weapon system the engine supports.

OSD: The example given was the T-53-13 (T-53) engine which supports both the AH-1G (Cobra) helicopter and the UH-1H (Huey) helicopter. Since the inception of the Depot Maintenance Accounting and Reporting System, the cost of repair of components for supply which are common to more than one weapon/support system has been a problem. However, it has long been agreed that it would not be feasible to attempt to charge the costs of repairing common components to the weapon/support system from which they were removed, but to the weapon/support system designated by the Inventory Control Point based on his estimated requirements. The weapon/support system from which the component is removed is charged for the cost of the repair through the exchange material procedures.

IMPROPER COST TRANSFERS BETWEEN JOB ORDERS AND ENGINE PROGRAM

GAO: As a result of a study material costs were transferred from job orders with cost overruns to job orders having underruns based on estimated costs.

OSD: The Army has assured us that the practice of transferring costs without documenting the rationale for each such transfer has been discontinued and appropriate implementing instructions have been published dictating the responsibility for identifying and evaluating the rationale which supports the cost transfer.

NAVYMODIFICATION KITS NOT CHARGED TO OVERHAULED ENGINES

GAO: We found that modification kits used during the engine overhaul were not charged to the engine overhaul program.

OSD: DoD Instruction 7040.5 provides that modification kits are investment type items and are not chargeable as expense. The instruction also provides that when modification and maintenance are done concurrently at depot level, the total effort will be investment when the costs for modification, including the cost of investment items of equipment to be installed, are greater than the costs to perform the required maintenance, exclusive of any modification. However, as discussed above in the case of replacing missing components, since DoDI 7220.29 requires the accumulation and reporting of total costs, the modification kits should be costed on a statistical basis. As previously mentioned, DoDI 7040.5 is currently being revised and the policy set forth in the instruction is under study. Again, we point out that this policy was approved by the Comptroller General in his approval of DoDI 7040.5.

ERRONEOUS ALLOCATION OF CHARGES TO JOB ORDERS

GAO: At one Navy maintenance activity labor costs applicable to completed job orders are included in the uncompleted job orders for overhaul of similar items. Also, costs for cannibalized serviceable components are not charged to the job order for the engines being overhauled. Finally, credits for turn-ins are often applied to job orders other than the one generating the turn-in.

OSD: The Navy has advised that these are instances of non-compliance with existing instructions and that they plan to tighten control on the above procedures.

AIR FORCE

WEAKNESSES IN THE REVIEW AND CONTROL OF LABOR STANDARDS

GAO: We found the labor standards in use are outdated, unsupported, and based on estimates. In addition, management has exercised little control over the validity of labor standards or in selecting those labor standards to review.

OSD: The Air Force review indicates that the GAO finding is correct. Subsequent to the GAO visit, the Air Materiel Area has reviewed all engine labor standards and has classified them properly. A program has been initiated to review and upgrade these standards to satisfy an Air Force Logistics Command requirement for at least 80% coverage by either fully engineered standards or by standards developed from accepted industrial engineering estimating techniques. Target date for completion of this program is October 1970.

UNREALISTIC ALLOCATION OF MATERIAL COSTS

GAO: Air Force's allocation system results in material costs being allocated to work centers in which no material is used. We calculate the material costs for the J-79-15 major overhaul programs were understated by 32%.

OSD: Improvements scheduled for implementation July 1, 1970 will correct this deficiency. The cost of material used will be identified to specific items being repaired within each resource control center and then summarized to program level.

INCONSISTENCIES IN REPORTING MAINTENANCE COSTS

GAO: Different reporting systems used by the Air Force Maintenance Facilities show widely varying unit costs applicable to the same output. We identified four reports at the Air Materiel Area containing four different costs to overhaul J-79-15 engines during the same time period.

OSD: We concur, however, as the Air Force has pointed out, additional clarification is needed regarding the content and intended use of the different reports. The End Item Product Cost Report (RCS: LOG-K65) reflects the standard cost and projected actual cost to overhaul an engine. These data are based on labor standards and material standards and on factors for projected labor and material variances input by accounting. The report is used by Directorate of Maintenance Management as a basis to establish engine sale prices to customers. The report is prepared quarterly.

The Industrial Fund Cost of Sales Statement is a monthly report locally prepared and used at Air Materiel Area level to evaluate the effectiveness of sales prices. The procedures for preparing this report were developed locally. Time did not permit evaluation of these procedures. Since the report is for local purposes only and is not a part of any official system promulgated by higher headquarters directives, we do not feel that it should be considered as an official report.

The Maintenance Cost Summary Report (RCS: LOG-C175) is a semi-annual report. It reports separately the actual material cost and computed actual labor and overhead cost for each type of repair (major, minor, etc.) of each engine by type, model, series. All costs for the period are reflected, including that incurred on incomplete items remaining in work in process.

The Organic Maintenance Cost Report is the OSD report prepared in accordance with the requirements of DoDI 7220.29.

In summary, we agree with the GAO that a profusion of reports certainly contributes to confusion and lack of confidence in the data. However, we also feel that there should still be a distinction maintained between reports

designed for planning purposes, such as the K-65 used for projecting sales prices in advance of work, versus reports used to portray history of costs already incurred. It must be recognized that some disparity is to be expected between projections and history.

We will review the need for reporting requirements identified by GAO, and will take appropriate action based on this study.

PRINCIPAL OFFICIALS OF THE DEPARTMENT OF DEFENSE
AND THE MILITARY DEPARTMENTS
RESPONSIBLE FOR ADMINISTRATION OF ACTIVITIES
DISCUSSED IN THIS REPORT

	<u>Tenure of office</u>	
	<u>From</u>	<u>To</u>
<u>DEPARTMENT OF DEFENSE</u>		
SECRETARY OF DEFENSE:		
Melvin R. Laird	Jan. 1969	Present
Clark M. Clifford	Mar. 1968	Jan. 1969
Robert S. McNamara	Jan. 1961	Feb. 1968
DEPUTY SECRETARY OF DEFENSE:		
David Packard	Jan. 1969	Present
Paul H. Nitze	July 1967	Jan. 1969
ASSISTANT SECRETARY OF DEFENSE: (COMPTROLLER):		
Robert C. Moot	Aug. 1968	Present
Robert N. Anthony	Sept. 1965	Aug. 1968
<u>DEPARTMENT OF THE ARMY</u>		
SECRETARY OF THE ARMY:		
Stanley R. Resor	July 1965	Present
UNDER SECRETARY OF THE ARMY:		
Thaddeus R. Beal	Mar. 1969	Present
David E. McGiffert	July 1965	Feb. 1969
ASSISTANT SECRETARY OF THE ARMY (FINANCIAL MANAGEMENT):		
Eugene M. Becker	July 1967	Present

PRINCIPAL OFFICIALS OF THE DEPARTMENT OF DEFENSE
AND THE MILITARY DEPARTMENTS
RESPONSIBLE FOR ADMINISTRATION OF ACTIVITIES
DISCUSSED IN THIS REPORT (continued)

	<u>Tenure of office</u>	
	<u>From</u>	<u>To</u>

DEPARTMENT OF THE ARMY (continued)

COMPTROLLER OF THE ARMY:

Lt. Gen. John M. Wright, Jr.	Sept. 1970	Present
Lt. Gen. Frank Sackton	July 1967	Aug. 1970

DEPARTMENT OF THE NAVY

SECRETARY OF THE NAVY:

John H. Chafee	Jan. 1969	Present
Paul R. Ignatius	Sept. 1967	Jan. 1969

UNDER SECRETARY OF THE NAVY:

John W. Warner	Feb. 1969	Present
Charles F. Baird	Aug. 1967	Jan. 1969

ASSISTANT SECRETARY OF THE NAVY
(FINANCIAL MANAGEMENT):

Charles A. Bowsher	Dec. 1967	Present
--------------------	-----------	---------

DEPARTMENT OF THE AIR FORCE

SECRETARY OF THE AIR FORCE:

Dr. Robert C. Seamans, Jr.	Jan. 1969	Present
Dr. Harold Brown	Oct. 1967	Jan. 1969

UNDER SECRETARY OF THE AIR FORCE:

John L. McLucas	Mar. 1969	Present
Townsend Hoopes	Oct. 1967	Feb. 1969

PRINCIPAL OFFICIALS OF THE DEPARTMENT OF DEFENSE
AND THE MILITARY DEPARTMENTS
RESPONSIBLE FOR ADMINISTRATION OF ACTIVITIES
DISCUSSED IN THIS REPORT (continued)

Tenure of office
From To

DEPARTMENT OF THE AIR FORCE (continued)

ASSISTANT SECRETARY OF THE AIR
FORCE (FINANCIAL MANAGEMENT):

Spencer J. Schedler	June 1969	Present
Thomas H. Neilser	Jan. 1968	June 1969
Conrad Marks, Jr.	July 1964	Jan. 1968